FACT SHEET
FOR
THE HANFORD FACILITY
RESOURCE CONSERVATION AND RECOVERY ACT
DRAFT PERMIT
FOR THE TREATMENT, STORAGE, AND DISPOSAL
OF DANGEROUS WASTE

Permittees

United States Department of Energy
Keith Kline
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

United States Department of Energy
Roy Schepens
Office of River Protection
P.O. Box 450
Richland, Washington 99352

CH2M HILL Hanford Group, Inc.
P.O. Box 1500
Richland Washington 99352

This Fact Sheet has been developed by the Washington State Department of Ecology (Ecology) in accordance with the requirements of *Washington Administrative Code* (WAC) 173-303-840(2)(f). Its purpose is to present information on Ecology's tentative decision modify the Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit for the proposed treatment, storage, and/or disposal (TSD) of dangerous and/or mixed waste at the Hanford Facility to include the Integrated Disposal Facility (IDF) as an operating unit. The IDF is owned and will be operated by the U.S. Department of Energy Office of River Protection (ORP), the U.S. Department of Energy Richland Operations Office (DOE-RL) and co-operated by CH2M Hill.

This Fact Sheet contains the following sections:

1.0 Hanford Facility Permit Background

Ecology issued the Dangerous Waste Portion of the RCRA Permit (Permit) for the Hanford Facility in 1994. The Permit for Hanford provides standard and general facility conditions, as well as unit-specific conditions for the operation, closure, and post-closure of mixed and dangerous waste TSD units at Hanford.

The Permit is normally modified annually to incorporate newly permitted units, reflect Class 1/2/3 Modifications, and include minor changes in grammar, consistency, and presentation. The Washington State Dangerous Waste Regulations in WAC 173-303-830 describe the types of changes or modifications that may be made to a Dangerous Waste Permit issued by Ecology.

Approximately 50 TSD units at Hanford are operating or closing under RCRA interim status standards. The unit described in this Fact Sheet, the Integrated Disposal Facility (IDF), will be incorporated into the Permit and constructed and operated under final status standards.

Conditions of the Hanford Facility RCRA Permit are presented in six parts:

- Standard Conditions (Part I)
- General Facility Conditions (Part II)
- Unit-Specific Conditions for Final Status Operations (Part III)
- Corrective Action for Past Practices (Part IV)
- Unit-Specific Conditions for Units Undergoing Closure (Part V)
- Unit-Specific Conditions for Units in Post-Closure (Part VI).

After incorporating a TSD unit into the Permit, the general conditions (Parts I and II) apply. In addition, each TSD unit is subject to conditions based on its status as operating, undergoing closure, or in post-closure.

The draft IDF permit includes proposed conditions and modifications that will add the IDF to the Unit-Specific Conditions for Final Status Operations (Part III) portion of the Permit. This Fact Sheet only addresses the IDF-proposed conditions and modifications. This modification will allow DOE and CH2M HILL to construct and operate the IDF.

2.0 Procedures for Reaching a Final Decision on the Draft Permit

This Washington State Hazardous Waste Management Act, Chapter 70.105 Revised Code of Washington (RCW), and regulations promulgated in Chapter 173-303 of the Washington Administrative Code (WAC), regulate the management of dangerous waste in Washington. According to WAC 173-303-800, facilities that treat, store, and/or dispose of dangerous waste must obtain a permit for these activities.

A 45-day public comment period for the draft IDF modifications to the Hanford RCRA Permit begins on May 6, 2005 and ends on June 20, 2005. All comments received during

the public comment period will be considered and responded to before final decisions are made on the proposed conditions. Regulatory requirements for the public review process (for permit modifications) are described in WAC 173-303-830(3) and in WAC 173-303-840(3). Written comments must be post-marked or received by e-mail no later than June 20, 2005. Comments hand-delivered by June 20, 2005, also will be accepted. Direct all written and e-mail comments to:

Suzannne Dahl
Department of Ecology
3100 Port of Benton Blvd.
Richland, WA 99352
E-mail address: sdah461@ecy.wa.gov

No public hearing is scheduled at this time. A meeting will be held if it is determined that there is significant public interest in holding one. To request a public hearing, contact Tim Hill, tihi461@ecy.wa.gov, (509) 372-7908.

Ecology will consider and respond to all written comments submitted by the deadline, and verbal comments submitted at a public hearing should one be held. Ecology will then make a final permit decision, which will become effective 30 days after Ecology provides notice of the decision to the Permittees and all who commented. If Ecology's decision includes substantial permit changes because of public comment, Ecology will initiate a new public comment period.

If special accommodations are needed for public comment, please contact Tim Hill, Department of Ecology, Nuclear Waste Program, at (509) 372-7908 (voice) or (360) 407-6006 (TDD).

The permittees and all those who commented shall receive a copy of the responsiveness summary and a notification of the final permit decision. Ecology's final permit decision may be appealed within 30 days after the final permit decision has been received.

This Fact Sheet and proposed draft permit modifications are available on the World Wide Web at **http://www.ecy.wa.gov/programs/nwp/**.

Copies of the Permit, including the proposed, draft permit modifications are also available for review at the Hanford Public Information Repositories listed as follows:

Hanford Public Information Repositories

Portland
Portland State University
Branford Price Miller Library
934 SW Harrison and Park
Portland, Oregon 97207

(503) 725-3690
Attn: Michael Bowman/Jocelyn Kramer
E-mail: bowman@lib.pdx.edu

Richland
Public Reading Room
2770 University Drive
Consolidated Information Center, Rm. 101L
Richland, Washington 99352
(509) 372-7443
Attn: Terri Traub
E-mail: reading_room@pnl.gov

Spokane
Gonzaga University
Foley Center
East 502 Boone
Spokane, Washington 99258-0001
(509) 323-3839
Attn: Connie Scarppelli
E-mail: carter@its.gonzaga.edu

Seattle
University of Washington Suzzallo Library
Government Publication Division
Seattle, Washington 98195
(206) 543-4664
Attn: Eleanor Chase
E-mail: echase@u.washington.edu
Public Service: (206) 543-1937

In addition, Ecology's SEPA decision of a mitigated determination of non-significance (DNS) by adoption of ……is available for review and comment during this 45-day public comment period and at the public meeting. Direct all written SEPA comments to:

Melinda Brown
Washington State Department of Ecology
3100 Port of Benton Boulevard
Richland, Washington 99354
E-mail address: Mbro461@ecy.wa.gov

For additional information, call the Hanford Cleanup Hotline toll-free at (800) 321-2008.

3.0 Proposed Modifications to the Hanford Facility RCRA Permit

Proposed Modifications to the Hanford Facility RCRA Permit include permitting one operating unit (Part III), the Integrated Disposal Facility (IDF).

3.1 Background on IDF Permitting

Ecology received a Dangerous Waste Permit Application for the IDF on June 30, 2003, from CH2M HILL (as co-operator) and the U.S. Department of Energy (as owner /operator). Ecology issued Notice of Deficiency (NOD) comments to DOE-ORP and DOE-RL and CH2M-HILL in January 2004. The NOD comments were discussed in workshops and resulted in a revised Part B application, submitted to Ecology by DOE-ORP and DOE-RL and CH2M HILL on February 12, 2004. In June, 2004, DOE-ORP submitted a modification to the IDF Part B Permit Application, Revision 1, to include a Secondary Leak Detection System to the design of the IDF. In February, 2005, DOE-ORP submitted a second modification to the Permit to limit the wastes accepted at the IDF to vitrified low-activity waste (LAW) from the River Protection Project's Waste Treatment Plant (RPP-WTP) and the Demonstration Bulk Vitrification System (DBVS) as well as mixed waste generated by IDF operations.

3.2 The IDF Permitting Process

The DOE is seeking a permit to store and dispose of mixed waste at their proposed IDF Facility. Facilities that seek a dangerous waste or mixed waste permit must complete the process leading to a final permit decision. Such facilities must submit a detailed permit application for a final permit [WAC 173-303-806(2)]. The permit application must provide facility-specific design and operational information to demonstrate regulatory requirements can be met [WAC 173-303-806(4)].

If Ecology determines that the application is sufficiently complete, Ecology is authorized to prepare a draft permit for public notice [WAC173-303-840(2)]. The draft permit incorporates major portions of the permit application.

Ecology has determined that the IDF Hanford Facility Dangerous Waste Permit Application is sufficiently complete, and Ecology has prepared a draft permit for public notice. The draft permit indicates Ecology's tentative decision to issue a final permit to IDF. This tentative decision is subject to public review and comment. Ecology will consider all public comment before making the final decision on whether to issue a final permit to the IDF. (Regulatory requirements for the public review process are described in WAC 173-303-840(3) through (9) and 40 CFR §124.10).

A Permittee is allowed to request a temporary authorization to implement a Class 2 or 3 modification prior to public notice and comment, pursuant to WAC 173-303-830(4)(e). A temporary authorization must meet the criteria described in WAC 173-303-830(4)(ii)(A). The purpose of a temporary authorization is to allow the timely implementation of a permit modification. Ecology may approve the request for a

temporary authorization if the request meets one of the five criteria in WAC 173-303-830(4)(e)(iii)(B). In August, 2004, DOE-ORP requested, and Ecology granted, a Temporary Authorization in accordance with WAC 173-303-830(4)(e) for rough excavation to proceed at the IDF. In granting this request, Ecology determined that the request met one of the five criteria found in WAC 173-303-830(4)(e)(iii)(B), namely: (I) To facilitate timely implementation of closure or corrective action activities. In March 2005, DOE-ORP requested and Ecology granted a second Temporary Authorization to allow construction of admix test pads (ATP) and two RCRA groundwater monitoring wells and to perform an ATP demonstration at the IDF site. In granting this request, Ecology found that it also met the requirements of WAC 173-303-830(4)(e)(iii)(B)(I).

3.3. IDF Design and Construction Process

The IDF design meets all landfill requirements as stipulated in 40 CFR 264 Subpart N and WAC-173-303-665. At a minimum, construction will be performed in accordance with Chapter 4 of the IDF permit application, which includes engineered drawings, construction specifications, and the Construction Quality Assurance Plan.

3.4 IDF Description

The Integrated Disposal Facility (IDF) will consist of an expandable lined landfill located in the 200 East Area on the Hanford Facility. The landfill will be divided lengthwise into distinct east and west cells, one for disposal of low-level radioactive waste and the other for disposal of mixed waste. The cell for disposal of low-level radioactive waste will be outside the scope of this permit application. . The mission of the IDF will include the following functions:

- Provide an approved disposal facility for the permanent, environmentally safe disposition of vitrified low-activity waste (LAW) packages that meets the environmental requirements and is approved by the U.S. Department of Energy (DOE) and Ecology. Low-activity waste is radioactive tank waste supernatant that has been treated to remove portions of certain radionuclides, principally cesium, strontium, and actinides.

- Receive vitrified (LAW) from the River Protection Project Waste Treatment Plant (RPP-WTP) and RPP tank operations Demonstration Bulk Vitrification System (DBVS) and dispose of this waste onsite.

- Dispose of mixed low level waste generated by IDF operations

The IDF will be constructed on 25 hectares of vacant land southwest of the PUREX Plant in the 200 East Area . The IDF will consist of a lined landfill that will be constructed in several phases. The landfill will be segregated into a RCRA permitted cell and a non-RCRA permitted cell. The scope of this permit application is limited to the western cell of the landfill where the RCRA waste will be stored and disposed. The landfill is

designed to accommodate four layers of vitrified LAW waste containers separated vertically by 0.9-meters of soil.

This initial construction will start at the northern edge and the size is approximately 223 meters East/West by 233 meters North/South by 14 meters deep. At this initial size, IDF disposal capacity is 82,000 cubic meters of waste. Subsequent construction phase(s) will require a modification to the Part B Permit to be constructed after waste placement has progressed in the landfill to the point that additional disposal capacity is needed. This approach minimizes the open area susceptible to collection of rainwater and subsequent leachate

The landfill, is currently estimated at full build out to be up to 446 meters wide by 555 meters in length by up to 14 meters deep. The RCRA regulated portion of the landfill would be half of that at approximately 223 meters wide by 555 meters long by up to 14 meters deep providing a waste disposal capacity of up to 450,000 cubic meters.

The Leachate Collection System (LCS) will be designed to segregate leachate collected from the individual cells. A high point down the center of the liner system will ensure the leachate from the RCRA permitted cell does not contaminate the leachate from the non-RCRA cell. The IDF will include a secondary leak detection system (SLDS), the purpose of which is to provide access to the area immediately below the Leak Detection System (LDS) sump area. The SLDS will collect liquids resulting from construction water and potentially, liquid from other sources. The SLDS liners will convey collected liquids to the SLDS piping for monitoring and/or removal. The RCRA permitted cell of the IDF will include a 90-day accumulation area for collection of leachate in a large tank for the Leachate Collection and Removal System (LCRS) and the Leak Detection System (LDS), and a smaller portable container for the Secondary Leak Detection System (SLDS). The leachate collection tanks will be located at the north end, in close proximity to the lined landfill. The tank will be protected by secondary containment. Leak detection of the tank will be provided by monitoring of the secondary containment. The leachate will be collected and sampled before transfer to an onsite TSD unit or offsite TSD facility. The leachate collection tank will be operated in accordance with the generator provisions of WAC 173-303-200 and WAC 173-303-640 as referenced by WAC 173-303-200.

Before disposal, all waste will meet land disposal restriction (LDR) requirements [Revised Code of Washington (RCW) 70.105.050(2), WAC 173-303-140, and 40 Code of Federal Regulations (CFR) 268 incorporated by reference in WAC 173-303-140].

Future landfill construction and design within the IDF will be subject to change as disposal techniques improve or as waste management needs dictate. Additional IDF landfill development for mixed waste greater than the permitted size will be evaluated against WAC 173-303 requirements.

3.5 Basis for Draft IDF Permit Conditions

Proposed permit conditions for the Integrated Disposal Facility generally fall under two categories:

Category one conditions: (III.11.A through III.11.F.3.a, and III.11.F.3.d through III.11.H). These conditions are based upon the minimum technical and operational requirements as stipulated in 40 CFR 264 Subpart N, WAC 173-303-665 (Landfills) WAC 173-303-810 (General Permit Conditions) and the existing Hanford Facility RCRA Permit. These conditions were established to ensure the IDF will be designed, constructed and operated as prescribed in the applicable regulations and existing permits. Examples include but are not limited to implementing a construction quality assurance program, change control for design drawings etc. Category one conditions apply to most standard RCRA landfills which dispose of mixed waste.

Ecology determined during the application review cycle that the application did not meet one of the minimum technical requirements [WAC 173-303-806(4)(h)(v)] which requires submittal of appropriate detailed plans and engineering report for the final closure cap. Figure 1 (below) and a generic description of what the closure cap may look like were provided in chapter 11 (Closure) of the application. A comment identifying this deficiency was provided to the Permittees. The Permittees explained that designing the cover closer to the time of placement would provide an approach that allowed for development of an improved knowledge of disposed waste and thus, selection of the cover design details based on a defined hazard and based on most current requirements of WAC 173-303-806.

In order to support the IDF construction schedule Ecology agreed to this approach based on WAC 173-303-806(4)(a): "…If owners and operators of TSD facilities can demonstrate that the information prescribed in Part B cannot be provided to the extent required, the department may make allowance for submission of such information on a case-by-case basis." Additonally WAC 173-303-815(3)(a) allows the department to establish compliance schedules: "The permit may, when appropriate, specify a schedule of compliance leading to compliance with this chapter."

Pursuant to -806(4)(a) and – 815(3)(a) and to ensure that the closure cap will have sufficient review both by the agency and the public the following permit condition is provided within this draft permit:

> III.11.C.1.a LANDFILL CAP
>
> At final closure of the landfill the Permittees shall cover the landfill with a final cover (closure cap) designed and constructed [WAC 173-303-665(6), WAC-173-303-806(4)(h)] to: Provide long-term minimization of migration of liquids through the closed landfill; Function with minimum maintenance; Promote drainage and minimize erosion or abrasion of the cover; Accommodate settling and subsidence so that the cover's integrity is maintained; and have a permeability less than or equal to the permeability of any bottom liner system or natural sub soils present.
>
> Compliance Schedule

Proposed conceptual final cover design is presented in chapter 11 of attachment 52 (landfill closure). Six months prior to start of construction of final cover but no later than 6 months prior to acceptance of the last shipment of waste at the IDF, Permittees shall submit final design for the IDF closure cap to Ecology for review and approval.

Category two conditions: (III.11.F.3.b, III.F.3.c, III.F.3.d, III.11.I.1 through III.11.I.5). As used in this draft permit these conditions intentionally exceed minimum technical and operational requirements based on performance standards specified in WAC 173-303-283 as follows:

"(2) Applicability. This section applies to all dangerous waste facilities permitted under WAC 173-303-800 through 173-303-840. These general performance standards must be used to determine whether more stringent facility standards should be applied than those spelled out in WAC 173-303-280, 173-303-290 through 173-303-400 and 173-303-600 through 173-303-692."

"(3) Performance standards. Unless authorized by state, local, or federal laws, or unless otherwise authorized in this regulation, the owner/operator must design, construct, operate, or maintain a dangerous waste facility that to the maximum extent practical given the limits of technology prevents:

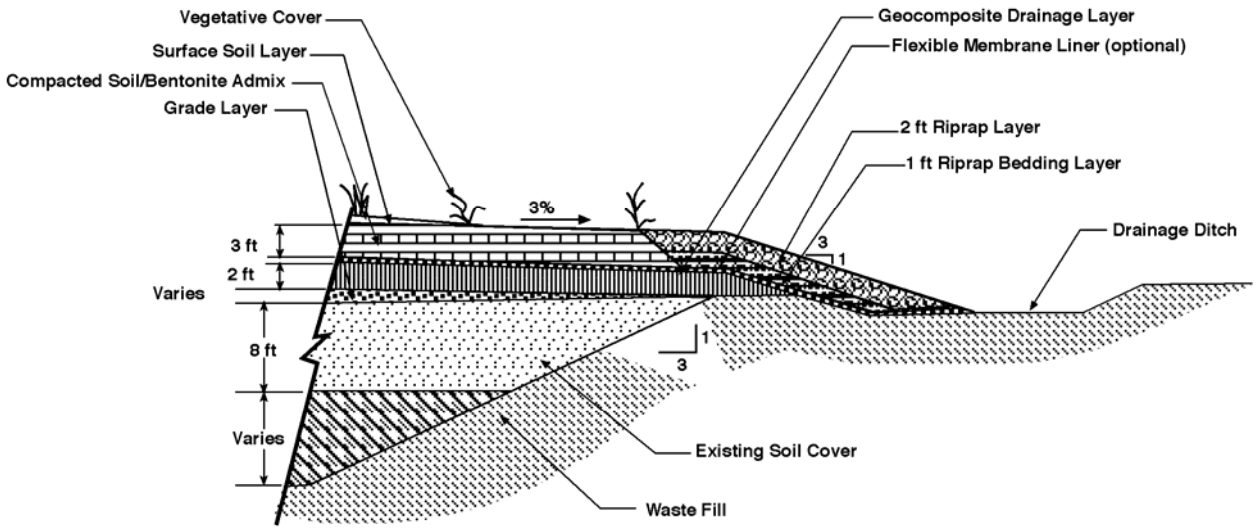
(a) Degradation of ground water quality;

(h) The use of processes that do not treat, detoxify, recycle, reclaim, and recover waste material to the extent economically feasible; and

(i) Endangerment of the health of employees, or the public near the facility."

Examples include conditions which stipulate design construction and operation of the secondary leak detection system; and conditions that stipulate waste acceptance criteria based on risk modeling and glass performance. Nether of these types of conditions are required for permitting a standard mixed waste landfill.

Category two conditions are conservative and were developed to address perceived uncertainties associated with the Vitrification processes that will generate the ILAW and BVW streams.



Notes:

1. Drawing not to scale.
2. Cover shown for unlined trench.
   Similar configuration for lined trench.

To convert feet (ft) to meters, multiply by 0.3048.

H00040105.2

M0105-2.1
5/31/01

Fig. 1 General Closure Cap Design